Office Action Summary	Application No.	Applicant(s)	
	10/511,743	BOYLE ET AL.	
	Examiner	Art Unit	
	JORDAN KLEIN	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *33-50* is/are allowed.

6)☒ Claim(s) *1-4,7-15 and 24-32* is/are rejected.

7)☒ Claim(s) *5,6 and 16-23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/15/2009*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *10/30/2009* .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the Applicant's Amendment filed June 15th, 2009. In virtue of this communication claims 1-50 are currently addressed in the instant application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4, 7-15, 24-28, are rejected under 35 U.S.C. 102(e) as being anticipated by Boyle et al. (U.S. Patent No. 6,586,707; hereinafter referred to as Boyle).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claim 1, Boyle discloses a method of using a pulsed laser (see

column 2, line 17) of program-controlled (see column 5, line 14,15) dicing of a substrate (see column 5, line 48,49) comprising at least one layer (see fig. 1 (it is implicitly understood that the wafer has at least one layer)), the method comprising the steps of:

a. providing program control means and associated data storage means (see column 5, line 14,15; a processor uses a computer program and as such the control system and the data system use a computer program) for controlling the pulsed laser (see column 1, line 59,60);

b. providing in the associated data storage means a laser cutting strategy file (see column 5, line 46-51 (referred to as the machining strategy; machining strategy understood as being a program file input into the control system for the control of laser machining)) of a plurality of selected combination of pulse rate, pulse energy and pulse spatial overlap (see column 2, line 38-40 (referred to as scan velocity, laser power, and pulse overlap respectively) and column 7, line 43-50) of pulses produced by the laser at the substrate to restrict damage to the respective at least one layer while maximising machining rate for the at least one layer (see column 5, line 41-51);

c. providing in the laser cutting strategy file data representative of at least one selected plurality of scans of the respective at least one layer by the pulsed laser necessary to cut through the respective at least one layer when the pulsed laser is operating according to a respective combination stored in the laser cutting strategy file; (see column 2, line 48-49, column 5, line 45-58 and column 6, line 14-24 and Fig. 5) and

d. using the laser under control of the program control means driven by the laser cutting strategy file (see column 5, line 14,15) to scan the at least one layer with the respective

at least one selected plurality of scans (see column 3, line 19,20 and Figs. 1 & 5) at least to facilitate dicing of the substrate (see column 2, line 48,49) such that a resultant die has at least a predetermined die strength (see column 5, line 44 (it is understood that this implicitly discloses predetermined die strength)) and a yield of operational die equals at least a predetermined minimum yield (see column 1, line 15 and column 1, line 48,49 (it is understood that this implicitly discloses predetermined minimum yield)).

With respect to claim 2, Boyle discloses all of the limitations of claim 1, further comprising the steps of providing a laser cutting strategy file comprise, for each of the at least one layer, the steps of:

b1. varying at least one of a combination of pulse rate, pulse energy, pulse spatial overlap to provide a respective combination (see column 8, line 5-7 (referred to as parameters));

b2. measuring a cutting rate of the respective layer using the respective combination (see Fig. 6 and column 3, line 63,64);

b3. examining the layer to determine whether damage is restricted to a predetermined extent (see column 5, line 11,12);

b4. dicing the substrate and measuring yield of the resultant die (see column 2, line 48,49 (it is understood that this implicitly discloses measuring yield of the resultant die));

b5. measuring die strength of the resultant die (see column 5, line 46 (it is understood that this implicitly discloses measuring die strength of the resultant die));

b6. creating a laser cutting strategy file of a selected combination which maximises

cutting rate while resulting in a yield of operational die which have at least the predetermined minimum yield and for which the die have at least the predetermined die strength (see column 5, line 46-51 (it is understood that this implicitly discloses the predetermined minimum yield and die strength));

c 1. scanning the at least one layer using the selected combination to determine a plurality of scans necessary to cut through the layer (see column 7, line 54-65); and

c2. storing the selected plurality of scans in the laser cutting strategy file (see column 5, line 48,49).

With respect to claim 4, Boyle discloses all of the limitations of claim 1, wherein the step d of using the laser to scan the at least one layer includes providing a galvanometer-based scanner (see column 4, line 33-35).

With respect to claim 7, Boyle discloses all of the limitations of claim 1, wherein the step of providing a selected combination comprises providing a selected combination which restricts thermal loading of the material of the respective layer to restrict mechanical stress to a predetermined maximum (see column 5, line 41-49).

With respect to claim 8, Boyle discloses all of the limitations of claim 1, wherein the selected combination is used for less than the selected plurality of scans, which corresponds to the selected combination, to machine a layer to be cut and the layer is scanned for further scans up to the selected plurality using a combination (see column

2, line 14-17) which will not significantly machine an underlying layer such that substantially no machining occurs of the underlying layer should the laser continue to scan the substrate after the layer to be cut has been cut through (see column 10, line 28-30 (it is understood that this is implicitly disclosed)).

With respect to claim 9, Boyle discloses all of the limitations of claim 1 and claim 8, wherein the method as claimed in claim 8 is used for scribing a substrate through the layer to be cut for subsequent mechanical dicing of the substrate (see column 5, line 19-22 and Fig. 2).

With respect to claim 10, Boyle discloses all of the limitations of claim 1, wherein the substrate includes an active layer (see column 11, line 9 (referred to as active materials on the wafer surface)), wherein the step of providing a selected combination to restrict damage to the at least one layer comprises providing a selected combination which does not significantly affect the subsequent operation of active devices in the active layer (see column 5, line 59-63 (it is understood that this implicitly includes the active layer as part of the resultant wafer)).

With respect to claim 11, Boyle discloses all of the limitations of claim 1 and claim 10, wherein the step of providing a selected combination which does not significantly affect the subsequent operation of active devices in the active layer comprises providing a combination which does not cause significant cracks to

propagate through the active layer (see column 5, line 46-51 (it is understood that this implicitly includes the active layer as part of the wafer)).

With respect to claim 12, Boyle discloses all of the limitations of claim 1, wherein the step of providing a selected combination comprises the steps of:
b7. providing an initial combination at which the laser machines the substrate at an initial rate which does not cause significant crack propagation due to thermal shock at an ambient temperature (see column 5, line 46-51), and such that a temperature of the substrate is raised by the machining after a predetermined plurality of scans of the substrate by the laser to a raised temperature above ambient temperature (see column 8, line 45-47);
b8. and providing a working combination at which the laser machines the substrate at a working rate, higher than the initial rate, (see column 5, line 59-63) which does not cause significant crack propagation due to thermal shock at the raised temperature (see column 5, line 46-51); and step d of machining the substrate includes:
d4. machining an initial depth of the substrate using the initial combination for at least the predetermined plurality of scans (see column 3, line 19,20); and
d5. machining at least part of a remaining depth of the substrate using the working combination (see column 8, line 5-7).

With respect to claim 13, Boyle discloses all of the limitations of claim 1, wherein an energy of at least a first of the plurality of scans is lower than an energy of

succeeding scans of the plurality of scans such that a generation of surface micro-cracks is less than would otherwise be produced (see column 8, line 5-7).

With respect to claim 14, Boyle discloses all of the limitations of claim 1, wherein an energy of at least a final of the plurality of scans is lower than an energy of preceding scans of the plurality of scans such that backside chipping of the substrate is less than would otherwise be produced (see column 8, line 5-7).

With respect to claim 15, Boyle discloses all of the limitations of claim 1, wherein energy of the plurality of scans is varied between scans to facilitate removal of debris generated during dicing of the substrate, conveniently by increasing laser energy with increasing machining depth to remove debris for a dice lane (see column 5, line 24-30).

With respect to claim 24, Boyle discloses all of the limitations of claim 1, comprising the further step after dicing of scanning an edge of the resultant die with the laser with sufficient energy to heat sidewalls of the resultant die to reduce surface roughness thereof and thereby increase die strength of the resultant die (see column 11, line 52,53).

With respect to claim 25, Boyle discloses all of the limitations of claim 1, for producing die with rounded comers by scanning the laser beam along a curved trajectory at corners of the die using a galvanometer based scanner, wherein the

selected combination is adapted to maintain the selected pulse spatial overlap between consecutive laser pulses around an entire circumference of the die (see column 4, line 30-35).

With respect to claim 26, Boyle discloses all of the limitations of claim 1, wherein the selected combination is adapted to deliver pulses at an arcuate portion or comer of the die such that substantially no over-cutting or undercutting generating a defect at the arcuate die edge or corner occurs (see column 4, line 30-35 and column 5, line 59-63 (it is understood that this implicitly discloses no over-cutting or undercutting).

With respect to claim 27, Boyle discloses all of the limitations of claim 1, to form a tapered dice lane having arcuate walls tapering inwards in a direction away from the laser beam by varying a width of the dice lane as the laser scans through the substrate wherein the selected combination is modified to give a finely controlled taper and smooth die sidewalls, and thereby increase die strength of the resultant die (see column 9, line 23-33 (it is implicitly understood that providing a tapered structure to the die sidewalls would increase the die strength)).

With respect to claim 28, Boyle discloses all of the limitations of claim 1, wherein the laser is a Q-switched laser device (see column 7, line 1-3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boyle (U.S. Patent No. 6,586,707) in view of Nakazawa et al. (U.S. Patent Application Publication 2002/0019074 A1; hereinafter referred to as Nakazawa).

With respect to claim 3, Boyle discloses that the die strength is measured (see column 5, line 44 (it is understood that this implicitly discloses measuring die strength)).

Boyle does not disclose that the die strength is measured using a Weibull die strength test.

Nakazawa teaches wherein the die strength is measured using a Weibull die strength test (see page 2, paragraph 0033 and Fig. 15A & B).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the laser machining method of Boyle by employing the Weibull die strength test to measure die strength as taught by Nakazawa so as to improve the flexural strength of die as compared to conventional devices and methods (see page 5, paragraph 0069).

6. Claims 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyle (U.S. Patent No. 6,586,707) in view of Yoo et al (U.S. Patent No. 6,130,401; hereinafter referred to as Yoo).

With respect to claims 29, Boyle discloses all of the limitations of claims 1, wherein a laser beam is directed by mirrors (see column 4, line 59).

Boyle does not disclose that a laser beam from the laser is directed by rotatable mirrors and furthermore does not disclose that the rotatable mirrors are used for directing a laser beam from the laser on the substrate.

Yoo teaches wherein a laser beam from the laser is directed by rotatable mirrors and furthermore that the rotatable mirrors are used for directing a laser beam from the laser on the substrate (see column 4, line 62-64, column 5, line 12-15 and Fig. 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the laser machining method and apparatus of Boyle by employing the rotatable mirrors as taught by Yoo so as to allow the laser beam to be directed to cut a workpiece (see column 4, line 62-62 and Fig. 7).

7. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyle (U.S. Patent No. 6,586,707) in view of Yamanaka (U.S. Patent No. 5,358,590).

With respect to claims 30-32, Boyle discloses all of the limitations of claims 1, wherein that the substrate is mounted (see column 10, line 58,59) and that energy of final scans of the laser is controlled substantially to prevent damage (see column 8, line 5-7 (it is understood that this implicitly discloses the prevention of damage)).

Boyle does not disclose wherein the substrate is mounted on a tape or that the tape is substantially transparent to ultraviolet radiation or that the tape is polyolefin-based.

Yamanaka teaches wherein the substrate is mounted on a tape and that the tape is substantially transparent to ultraviolet radiation and that the tape is polyolefin-based (see column 4, line 27-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the laser machining method and apparatus of Boyle by employing the mounting tape that is transparent to ultraviolet radiation and is polyolefin-based as taught by Yamanaka so as to protect the wafer during the cutting process (see column 2, line 53-55) and to allow the tape to be easily peeled from the wafer after the irradiation with ultraviolet rays (see column 5, line 34-36).

Allowable Subject Matter

8. Claims 5-6 and 16-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 33-50 are allowed.

Response to Arguments

10. Applicant's arguments filed June 15th, 2009 have been fully considered but they are not persuasive.

a. With respect to the Applicant's argument "We submit that this is an inexcusable use of hindsight because a person skilled in the art would understand that the elements of Boyle could be each "processor controlled" without "providing program control means and associated data storage means for controlling the pulsed laser" on page 14 of the Applicant's remarks the Examiner respectfully disagrees. As stated in the rejection above a processor uses a computer program and as such the control system and the data system use a computer program. The reference as understood by the examiner does not preclude the control systems, data systems, motion systems, vision systems, and beam delivery from being controlled by the same processor and as such a person of ordinary skill in the art would understand such an interpretation. With respect to the Applicant's arguments submitting that such an interpretation is an inexcusable use of hindsight the Examiner disagrees because as long as [the interpretation] takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only

from applicant's disclosure, such a reconstruction is proper. *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

b. With respect to the Applicant's argument that "there is no hint or suggestion in Boyle that the 'machining strategy' is 'a laser cutting strategy file, of a plurality of selected combinations of pulse rate, pulse energy and pulse spatial overlap of pulses produced by the laser at the substrate to restrict damage to the respective at least one layer while maximizing machining rate for the at least one layer' as claimed" on page 14 of Applicant's remarks the examiner respectfully disagrees. As stated in the rejection above the machining strategy is understood as being a program file input into the control system for the control of laser machining. The machining strategy as understood by the examiner "results in a net increase in the speed of the machining without thermally loading the wafer and without generating chips and cracks in the wafer" (see column 5, line 49-51) [and] "wafer parameters, laser parameters, hardware and laser scan parameters contribute to the improvement in the machining process and speed" (see column 5, line 55-58), and as such the machining strategy controls the laser and scan parameters as the laser cutting strategy file does in the claimed invention. As understood by the Examiner, the machining strategy utilizes numerous adjustable parameters such as scan velocity, laser power, and pulse overlap which are equated to pulse rate, pulse energy and pulse spatial overlap of pulses of the claimed invention.

c. With respect to the Applicant's argument that "the machining strategy is the outcome of controlling the laser, optical and scan parameters and not a laser cutting

strategy file of a plurality of selected combinations of pulse rate, pulse energy and pulse spatial overlap of pulses as claimed in the present invention" on page 15 of the Applicant's remarks the Examiner respectfully disagrees. The cited reference that "the machining strategy may require the laser, optical or scan parameters to change throughout the machining process" is understood by the Examiner as the machining strategy controls the laser, optical and scan parameters equated to the laser cutting strategy file of the claimed invention.

d. With respect to the Applicant's argument that the disclosure in Boyle that, "in one embodiment, scan velocity, laser power and pulse overlap are chosen to control depth of material removal in any one scan" (Boyle col. 2 lines 38-40) does not disclose a laser cutting strategy file of a plurality of selected combinations of pulse rate, pulse energy and pulse spatial overlap of pulses as claimed in claim 1" the Examiner respectfully disagrees. As disclosed in the rejection above "scan velocity, laser power, and pulse overlap are chosen to control depth of material removal in any one scan" (see column 2, line 38-40) and "the speed at which the beam is canned depends on the dimensions of the focused beam and the repetition rate of the laser, as it is these factors that govern the spatial overlap between each laser spatial pulse profile" (see column 7, line 47-50). As such the scan velocity, laser power, and pulse overlap are equated with the pulse rate, pulse energy and pulse spatial overlap of pulses of the claimed invention.

e. With respect to the Applicant's argument that "there is no suggestion in Boyle, as apparently implied in the Office Action, that choosing scan velocity, laser

power and pulse overlap to control depth of material removal in any one scan results in restricting machining rate while maximizing machining rate as claimed for the combinations stored in the laser cutting strategy file of the present invention" the Examiner respectfully disagrees. As disclosed in the rejection above "an objective of machining is to machine through the wafer at the highest speed possible while meeting the required specification for edge smoothness and without reducing the mechanical strength of the wafer or substrate material" (see column 5, line 41-45) and the machining strategy is understood as providing this objective as claimed by the laser cutting strategy file of the present invention.

f. With respect to the Applicant's argument that "the Office Action asserts that Boyle discloses storing in a strategy file a number of scans to use with a combination selected from the strategy file to cut through a layer. Since we submit there is no disclosure of a strategy file in Boyle, we submit that this assertion must be incorrect. Furthermore, in none of the references to a machining strategy in Boyle is there any reference to a number of scans required to cut through a layer, as claimed in the present invention" on page 16 of the Applicant's remarks the Examiner respectfully disagrees. As disclosed in the rejection above Boyle discloses a laser cutting strategy file (see column 5, line 46-51 (referred to as the machining strategy; machining strategy understood as being a program file input into the control system for the control of laser machining)) and additionally the reference discloses a number of scans required to cut through a layer (see column 2, line 48-49, column 5, line 45-58 and column 6, line 14-24) as claimed in the present invention.

g. With respect to the Applicant's argument that "we submit that Boyle does not disclose program-controlled laser machining and in particular does not disclose laser machining controlled by a laser cutting strategy file" on page 16 of the Applicant's remarks the Examiner respectfully disagrees. As discloses in the rejection above Boyle discloses a laser cutting strategy file (see column 5, line 46-51 (referred to as the machining strategy; machining strategy understood as being a program file input into the control system for the control of laser machining)) and further discloses program-controlled laser machining (see column 5, line 14,15; a processor uses a computer program and as such the control system and the data system use a computer program; the laser machining is controlled by the laser cutting strategy file i.e. the machining strategy) as claimed in the present invention.

h. With respect to the Applicant's argument that "it is clear throughout the description and claims of the present application that the plurality of scans of the present invention necessary to cut through a layer or to dice a substrate are a plurality of vertically spaced scans at increasing depth in the layer or substrate, and not laterally offset scans as disclosed in the cited passage of Boyle" on page 16-17 of the Applicant's arguments the Examiner respectfully disagrees. As disclosed in the rejection above Boyle discloses using the laser under control of the program control means driven by the laser cutting strategy file (see column 5, line 14,15) to scan the at least one layer with the respective at least one selected plurality of scans (see column 3, line 19,20 and Figs. 1 & 5) at least to facilitate dicing of the substrate (see column 2, line 48,49) as claimed in the present invention. Additionally, the claims do not disclose

wherein the plurality of scans of the present invention are vertically spaced scans and not laterally offset scans as disclosed by Boyle.

i. With respect to the Applicant's argument that " machining a channel through a wafer or substrate such that the strength of the wafer or substrate is not reduced, as in Boyle, is clearly not the same as dicing a wafer to produce die with a predetermined die strength, which may or may not be less than the strength of the wafer, as in the present invention" on page 17 of the Applicant's remarks the Examiner respectfully disagrees. As understood by the Examiner, an initial wafer or substrate strength is equivalent to a die produced with a predetermined strength as long as the strength of the wafer or substrate is not reduced as a result of machining a channel through the wafer or substrate; the initial wafer or substrate strength is the predetermined die strength as in the present invention.

j. With respect to the Applicant's argument that "the disclosed object of Boyle is to provide an improved machining method, compared with that used in dicing, in order to enable the manufacture of micro-machined structures such as micro-fluidic devices, rather than disclosing dicing which produces die with a predetermined minimum yield" on page 17 the Examiner respectfully disagrees. As disclosed in the rejection above Boyle discloses that "mechanical machining has disadvantages such as low yield" (see column 1, line 14-15) and that "this invention is therefore directed towards providing for improved machining of semiconductor materials" (see column 1, line 48-49). As understood by the Examiner one of the objectives of Boyle is to provide for improved yield in the machining of semiconductor materials and as such the die

produced by this improved method would have a predetermined minimum yield, one that is at least an improvement over the disadvantageously low yielding of the mechanical machining.

For the above disclosed reasons claim 1 remains rejected as being anticipated by the teachings of Boyle.

With respect to the Applicant's arguments on page 18 regarding claim 2 the Examiner respectfully disagrees. See the rejection above wherein Boyle discloses the claimed limitations of claim 2.

With respect to the Applicant's argument of page 20 regarding claim 3 the Examiner respectfully disagrees. See the rejection above wherein Boyle and Nakazawa discloses the claimed limitations of claim 3. As understood by the examiner, machining a wafer without reducing the strength of the wafer obviously involves measuring the die strength otherwise one would not know if the strength of the wafer has been effected by the machining process.

With respect to the Applicant's argument on page 20 regarding claim 29, and arguments on page 21 regarding claims 30-32 the Examiner respectfully disagrees. See the rejection and argument above wherein Boyle is understood as disclosing the features of claim 1.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JORDAN KLEIN whose telephone number is (571)270-7544. The examiner can normally be reached on Monday - Friday 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SUE PURVIS can be reached on (571)-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JMK/
11/12/2009

/Sue A. Purvis/
Supervisory Patent Examiner, Art Unit 2826